LOWER WALLER CREEK FIELD GUIDE

15th Street to Lady Bird Lake ~ August 18, 2008

Watershed Protection and Development Review Department
Environmental Resource Management Division

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LOWER WALLER CREEK FIELD GUIDE

The Watershed Protection, Environmental Resource Management staff walked lower Waller Creek on August 18, 2008 . This field guide provides a visual tour of lower Waller Creek.

Our report includes a stream inventory of erosion problems and aquatic habitat conditions and block to block photographs from 15th Street at Waterloo Park to the confluence with Lady Bird Lake.

The Waller Creek Tunnel surface features include a pond and inlet at Waterloo Park, a creek side Inlet between 9th and 8th Street, a creek side inlet between 5th and 4th Street and the tunnel outlet at Lady Bird Lake. The approximate locations of the inlets and outlet are shown on the Watershed Map (page 4).

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INSERT 11” X17” WALLER CREEK MAP HERE.

Waller Creek Stream Assessment
Stream Stability

Waller Creek Field Notes for 18 August 2008 (Morgan Byars)

1. North of 15th Street bridge

Sediment supply to Waterloo Park/Tunnel Inlet location: The contributing watershed to Waller Creek upstream of 15th Street is approximately 4.75 square miles consisting of urban landscape with greater than 50% impervious cover. The channel bedform upstream of 15th varies between bedrock to alluvium and alluvial banks are predominant throughout the watershed. The Waller Creek channel has experienced degradation and widening following the surge of development between the 1950s and 1980's and its likely that most of Waller Creek has nearly reached its ultimate channel size. However localized erosion and bank stability problems persist and continue to contribute to the in stream bed material load.

a) Channel Bed Material – Alluvial, Channel Banks – Alluvial
b) Stream Stability – Depositional/Aggradation zone upstream of 15th Street Bridge
c) Creek Erosion Sites – none, recent UT project on east bank upstream of 15th
d) Property Ownership – University of Texas

2. 15th Street to 12th Street (Waterloo Park)
   a) Channel Bed – Alluvial, Channel Banks – Alluvial or Structural
   b) Stability – Stable to slightly aggradational pool-riffle-run system
   c) Property Ownership – City of Austin
   d) Creek Erosion Sites – minor undermining of rock walls in park

3. 12th Street to Red River
   a) Channel Bed – Rock, Channel Banks – Alluvial and Structural
   b) Stability – Stable with some sediment deposition near 12th Street Bridge
   c) Property Ownership – City of Austin Waller Creek Greenbelt/Trail
   d) Creek Erosion Sites – none

4. Red River to 11th (Symphony Square)
   a) Channel Bed – Rock, Channel Banks - Structural
   b) Stability – Stable with no evidence sediment deposition
   c) Property Ownership – City of Austin Symphony Square
   d) Creek Erosion Sites – none

5. 11th Street to 10th Street
   a) Channel Bed – Rock, Channel Banks – Alluvial and Structural
   b) Stability – Stable with minor traces of sediment deposition
   c) Property Ownership – City of Austin Waller Creek Greenbelt/Trail
   d) Creek Erosion Sites – none

6. 10th Street to 9th Street (Waller Creek Center)

a) Channel Bed – Rock, Channel Banks – Alluvial and Structural
b) Channel Stability – Stable
c) Property Ownership – City of Austin (east bank) and Private (west bank)
d) Creek Erosion Sites – Type 2 Wall: undermined wall at Red River Flats Apts. (612 E 9th Street)

7. 9th Street to 8th Street (APD Parking Garage and Stubbs, Proposed Lateral Spillway/Inlet Location #1)

a) Channel Bed – Rock, Channel Banks – Alluvial and Structural
b) Channel Stability – low head dam near 8th Street causing backwater and some aggradation
c) Property Ownership – City of Austin (east bank) and Private (west bank)
d) Creek Erosion Sites – none

8. 8th Street to 7th Street (COA Police HQ and Red Eye Fly)

a) Channel Bed – Rock, Channel Banks – Alluvial and Structural
b) Channel Stability – Vertically stable, low check dam at 7th Street causing backwater and some aggradation, planform adjustment and slope instability causing problems, west bank at Red Eye Fly
c) Property Ownership – City of Austin (east bank) and Private (west bank)
d) Creek Erosion Sites – Type 1 Building: imminent threat to Red Eye Fly building. Minor localized site runoff erosion concerns for businesses along E 7th Street.

9. 7th Street to 6th Street (The Boiling Pot)

a) Channel Bed – Rock, Channel Banks – Structural
b) Channel Stability – Stable
c) Property Ownership – City of Austin (north) and Private (south)
d) Creek Erosion Sites – none

10. 6th Street to 5th Street (The Hilton)

a) Channel Bed – Rock, Channel Banks – Structural
b) Channel Stability – Stable, low head dam at 5th Street causing backwater
c) Property Ownership – City of Austin (north) and Private (south)
d) Creek Erosion Sites – none

11. 5th Street to 4th Street (The Gas Pipe, Proposed Lateral Spillway/Inlet Location #2)

a) Channel Bed – Alluvial and rubble, Channel Banks – Alluvial
b) Channel Stability – vertically stable, concrete section at 4th Street Bridge provides grade control backwater, planform adjustment and slope instability threatening resources on east bank
c) Property Ownership – All private with no easements
d) Creek Erosion Sites – 3 Type 2 Erosion Problems (Parking lot, tree, wall)

12. 4th Street to 3rd Street (Sabine ROW and Winn Properties)

a) Channel Bed – Alluvial, Channel Banks – Alluvial
b) Channel Stability – In adjustment (active erosion), active planform adjustment and slope instability threatening resources on both banks
c) Property Ownership – City of Austin ROW (west bank) and private (east bank)
d) Creek Erosion Sites – 5 Type 1, 2 and 3 Erosion Problems (Building, Yard, Trail, Bridge)

13. 3rd Street to Red River (Palm Park)

a) Channel Bed – Alluvial, Channel Banks – Alluvial and Structural (failing)
b) Channel Stability – In adjustment (active erosion), active planform adjustment and slope instability threatening resources on both banks
c) Property Ownership – All City of Austin
d) Creek Erosion Sites – 3 Type 2 and 3 Erosion Problems (Retaining Wall and Trails)

14. Red River to Cesar Chavez (Convention Center and Iron Works)

a) Channel Bed – Alluvial, Channel Banks – Structural
b) Channel Stability – In Transition
c) Property Ownership – All City of Austin
d) Creek Erosion Sites – none identified, but some minor localized erosion near Red River Bridge due to site runoff

15. Cesar Chavez, south to Lady Bird Lake (Waller Beach)

a) Channel Bed – Alluvial, Channel Banks – Alluvial and Structural
b) Channel Stability – In Transition becoming more depositional due to backwater from Lady Bird Lake. Large point bar and greater meander migration potential downstream of Cesar Chavez.
c) Property Ownership – Mostly City of Austin and drainage easements
d) Creek Erosion Sites – 4 Type 2 and 3 erosion sites including walls and yards

WALLER CREEK STREAM ASSESSMENT
AQUATIC HABITAT

Waller Creek Walk Field Notes for 18 August 2008 (Todd Jackson)

1. North of 15th Street bridge
    a) Mowed over area with some large trees
    b) One notable hackberry tree with tree tag # 2630
    c) Exotic fish (apparently mollies) and *Gambusia* sp. in creek

2. 15th Street to 14th Street pedestrian bridge in Waterloo Park
    a) Entrance to Waterloo Park
    b) This segment appears to be a long deep run or glide with little to no riffle habitat present
    c) Fish observed: nesting Centrarchidae (*Lepomis* spp.), *Gambusia* sp., Cyprinidae, exotics (apparently mollies)
    d) Trees: pecan, willow, hackberry, palm
    e) Other plants observed: Johnson grass, giant reed (*Arundo donax*), garden exotics, wild grape, Virginia creeper, trumpet vine

3. 14th Street pedestrian bridge to 1st unnamed pedestrian bridge in Waterloo Park
    a) Variable stream substrate with combination of riffle and pool habitats; riparian vegetation appears to be in fair condition with more buffering capability than upstream areas
    b) Trees: willow, cottonwood, sycamore
    c) Other plants observed: giant ragweed, forbs
    d) Fish present but not otherwise noted
    e) Invertebrates observed under rocks: *Argia* sp. (damselfly), Baetidae (mayfly), Hydropsychidae (caddisfly), *Dugesia* sp. (flatworm), Physidae (snail), amphipods

4. 2nd unnamed pedestrian bridge to 3rd unnamed pedestrian bridge in Waterloo Park
    a) A turbid pool or deep run with steady flow (also one riffle area); down-stream-right-bank is all walled as a channel stabilizer, down-stream-left-bank has some riparian cover by giant ragweed, young willow trees and exotic plants and trees
    b) Trees: willow, pecan
    c) Other plants observed: giant ragweed, elephant ear and unidentified emergent aquatic macrophytes in stream (including *Ludwigia* sp.)
    d) Invertebrates observed under rocks: *Argia* sp. (damselfly), Baetidae (mayfly), Hydropsychidae (caddisfly), *Dugesia* sp. (flatworm), Physidae (snail), amphipods, freshwater sponges

5. 3rd unnamed pedestrian bridge to 12th Street in Waterloo Park
    a) An artificially constructed long pool area (result of bank stabilization measures); appears to be a very disturbed habitat
    b) Tree recruitment potential is reduced here by city maintenance crews (they are cutting vegetation near banks)
    c) Exotic and native fish observed in pool

6. 12th Street to unnamed pedestrian bridge south of 12th Street
    a) Mostly a slow run / pool-like habitat; channelized by bank stabilization measures; lacking significant riffle habitat
    b) Trees: live oak, red oak, willow, hackberry, elm
    c) Fish observed: Centrarchidae (*Lepomis* spp.), *Gambusia* sp., exotics (apparently mollies)

7. Unnamed pedestrian bridge to 10th Street
    a) This section is generally characterized by shallow scoured limestone areas and almost complete development up to the creek banks.
    b) There are some thin riparian areas containing trees and other plants.
    c) The group had talked about the possibility of habitat restoration here, but the few areas containing vegetation were on private property. The public spaces (including the Symphony Square) are generally concreted up to the stream banks, which would prohibit the establishment of riparian vegetation.

8. 10th Street to 9th Street (including Waller Creek Center)
    a) One half of this section is exposed limestone run leading into a large pool (second half is pool habitat)
    b) Trees: pecan, cypress, red bud, vitex (regular mowing is preventing any sapling recruitment here)
    c) Large fish were observed by other team members in the pool

9. 9th Street to 8th Street
    a) A pool followed by a riffle, then a long run. Down-stream-right-bank (Stubbs property) has some moderate riparian cover while the other side is more channelized. There is a small dam just above the 8th St. bridge.
    b) Trees: willow, pecan, Sabal Palmetto
    c) Other plants observed: wild grapes, elephant ear and unidentified emergent aquatic macrophytes in stream (including *Ludwigia* sp.)
    d) Red-ear slider turtles and Green Heron observed here

10. 8th Street to 7th Street
    a) Creek becomes restricted to channel between concrete barriers here.
    b) Trees: box elder, willow, Chinaberry, mulberry, hackberry
    c) Other plants observed: Johnson grass, giant reed (*Arundo donax*), Virginia creeper, poison ivy
    d) Invertebrates observed under rocks: *Argia* sp. (damselfly), Physidae (snail), amphipods, limpets
    e) Bats under 7th street bridge

11. 7th Street to 6th Street
    a) All constructed creek walk area
    b) There is little to no ecosystem function within this section.

12. 6th Street to 5th Street
    a) Straight channel / constructed creek walk area
    b) Very little ecosystem function within this section (however, two turtle were seen in this area).
    c) Brick and mortar covering of concrete channel sides have fallen off; adding to habitat degradation downstream.

13. 5th Street to 4th Street
    a) Broken chunks of concrete and mortared-brick pieces fill much of the channel (these come from just upstream). There is also a notable increase in trash (including floatables, broken glass and other debris) in this section.
    b) There appears to be considerable erosion here. Dark water containing suspended solids can be seen entering the creek during rain (which is currently in progress).
    c) Trees: some pecans, Chinese tallow
    d) Fish observed: Centrarchidae (*Lepomis* spp.), *Gambusia* sp.
    e) Invertebrates observed under rocks: Hydropsychidae (caddisfly), Physidae (snail), *Dugesia* sp. (flatworm), amphipods, freshwater sponge
    f) One large, dead watersnake found in channel

14. 4th Street to 3rd Street
    a) The upstream half of this section is a deep pool and the downstream half is a narrow riffle that ends in another pool near the bridge.
    b) Trees: elm, Chinese tallow, hackberry, vitex
    c) Other plants observed: Virginia creeper, wild grape, Johnson grass, and unidentified emergent aquatic macrophytes in stream (including *Ludwigia* sp.); also development of wetland plants and weedy forbs in gravel bars in center of stream channel
    d) Invertebrates observed under rocks: Hydropsychidae (caddisfly), amphipods, *Dugesia* sp. (flatworm), Hirudinea (leech)

15. 3rd Street to Red River
    a) The creek is largely channelized by concrete / brick structures here, though there are also small strips with a thin riparian buffer within this section (characterized as having fewer trees than elsewhere on this walk). Litter and large debris (tires, mattresses, etc.) seem to increase considerably within this section.
    b) Considerable erosion and sloughing of banks. * Damaged section of hike / bike trail may be a good mitigation site *
    c) Riffles within this section are largely composed of concrete, brick or other old building material (much of which appears to have come from near-stream development or artificial channel material) at upstream sites.
    d) Fish present in deeper runs
    e) Invertebrates observed under rocks: Physidae (snail), amphipods, freshwater sponge

16. Red River to Cesar Chavez
    a) Downstream part of this section becomes channelized by concrete / brick constructed banks, but there is some shading of stream by dense vines.
    b) Riffles within this section are largely composed of concrete, brick or other old building material, which appears to have come from failed walls and other near-stream or channel side structures upstream.
    c) Plants observed: several emergent wetland plants in channel (including rushes, pennywort, and *Ludwigia* sp.)
    d) Very large snapping turtles living in stream pool adjacent to Iron Works BBQ (they appear to be fed by patrons).
    e) Invertebrates observed under rocks: *Argia* sp. (damselfly), Hydropsychidae (caddisfly – cases found only), Physidae (snail), Hirudinea (leeches), amphipods

17. Cesar Chavez, south to Town Lake backwater area and Waller Creek delta
    a) Squatter trash dump by bridge (below abandoned buildings). There appears to be an increase in floatable trash and large debris downstream of bridge. Riparian buffer seems to begin to improve somewhat despite increase in litter.
    b) Trees: elm, willow, Chinese tallow, sycamore, box elder, red bud, hackberry, pecan
    c) Other plants observed: giant ragweed, giant reed (*Arundo donax*), Johnson grass, and unidentified emergent aquatic macrophytes in stream (including *Ludwigia* sp.)
    d) Invertebrates observed under rocks: *Argia* sp. (damselfly), *Dugesia* sp. (flatworm), Hydropsychidae (caddisfly), Physidae (snail), freshwater sponge

18. Town Lake backwater area and Waller Creek delta
    a) Water becomes too deep for survey at this point and observations were made from outside of channel above stream (pending a future survey from canoe).
    b) As the floodplain widens there is an improvement in riparian cover (diverse and dense cover by trees and understory plants)
    c) Notable tree tag numbers: cottonwood # 704, hackberry # 703
    d) There is an increase in two nuisance nursery species here: giant reed (*Arundo donax*) and vitex
    e) At pedestrian bridge crossing of Waller Creek delta the stream channel is used by a wider variety of vertebrate species. Ducks, herons, egrets and other birds were observed here, as were numerous turtles and fish. A survey of this delta area should be conducted prior to tunnel construction

Photo 1 ~ 15th street bridge, looking upstream

Photo 2 ~ looking downstream

Waller Creek ~ 15th to 12th

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Photo 3 ~ stream pool and riffle

Photo 4 ~ gravel bar

Waller Creek ~ 15th to 12th

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Photo 5 ~ stone dam and footbridge

Photo 6 ~ 12th street bridge, looking downstream

Waller Creek ~ 15th to 12th

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Photo 7 ~ 12th street bridge, looking upstream

Photo 8 ~ looking downstream to low water crossing

Photo 9 ~ low water crossing and storm drain outfall

Photo 10 ~ Red River bridge, looking downstream

Photo 11 ~ Red River bridge, symphony square

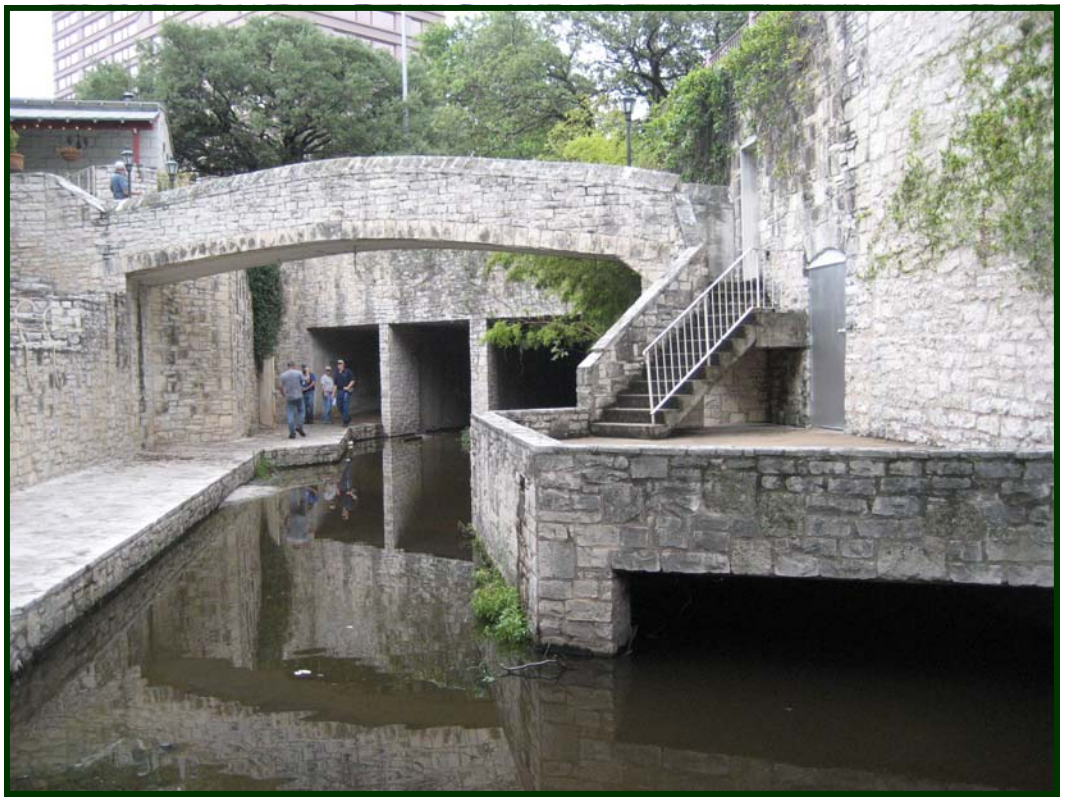

Photo 12 ~ 11th street bridge, looking downstream

Waller Creek ~ Red River to 11th

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Photo 13 ~ 11th street bridge, looking upstream

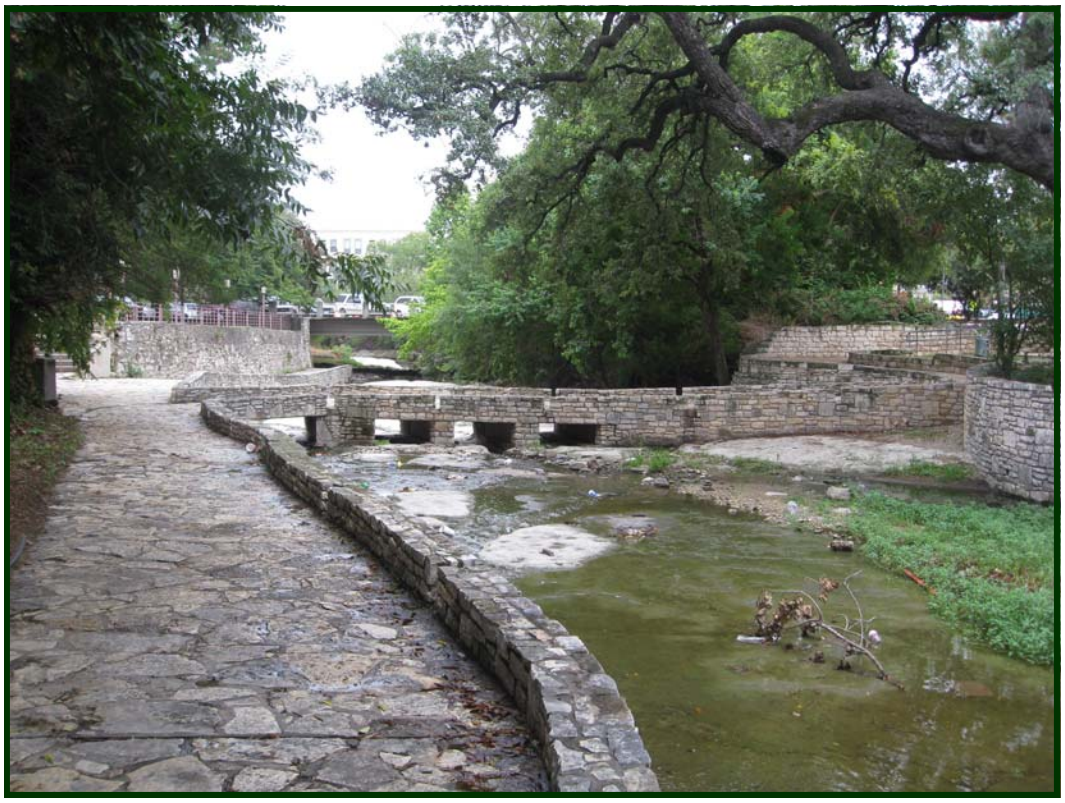

Photo 14 ~ low water crossing, looking downstream

Waller Creek ~ 11th to 10th

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Photo 15 ~ looking downstream

Photo 16 ~ 10th street bridge, looking downstream

Waller Creek ~ 11th to 10th

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Photo 17 ~ 10th street bridge, looking upstream

Photo 18 ~ looking downstream

Waller Creek ~ 10th to 9th

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Photo 19 ~ AWU building, storm drain outfall

Photo 20 ~ 9th street bridge, looking downstream

Waller Creek ~ 10th to 9th

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Photo 21 ~ 9th street bridge, looking upstream

Photo 22 ~ low dam, looking upstream

Waller Creek ~ 9th to 8th

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Photo 23 ~ red ear turtle

Photo 24 ~ green heron

Waller Creek ~ 9th to 8th

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Photo 25 ~ looking downstream

Photo 26 ~ 8th street bridge, Stubbs bar-b-q

Waller Creek ~ 9th to 8th

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Photo 27 ~ 8th street bridge, looking upstream

Photo 28 ~ bank erosion at the Red Eyed Fly

Waller Creek ~ 8th to 7th

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Photo 29 ~ low water crossing, looking upstream

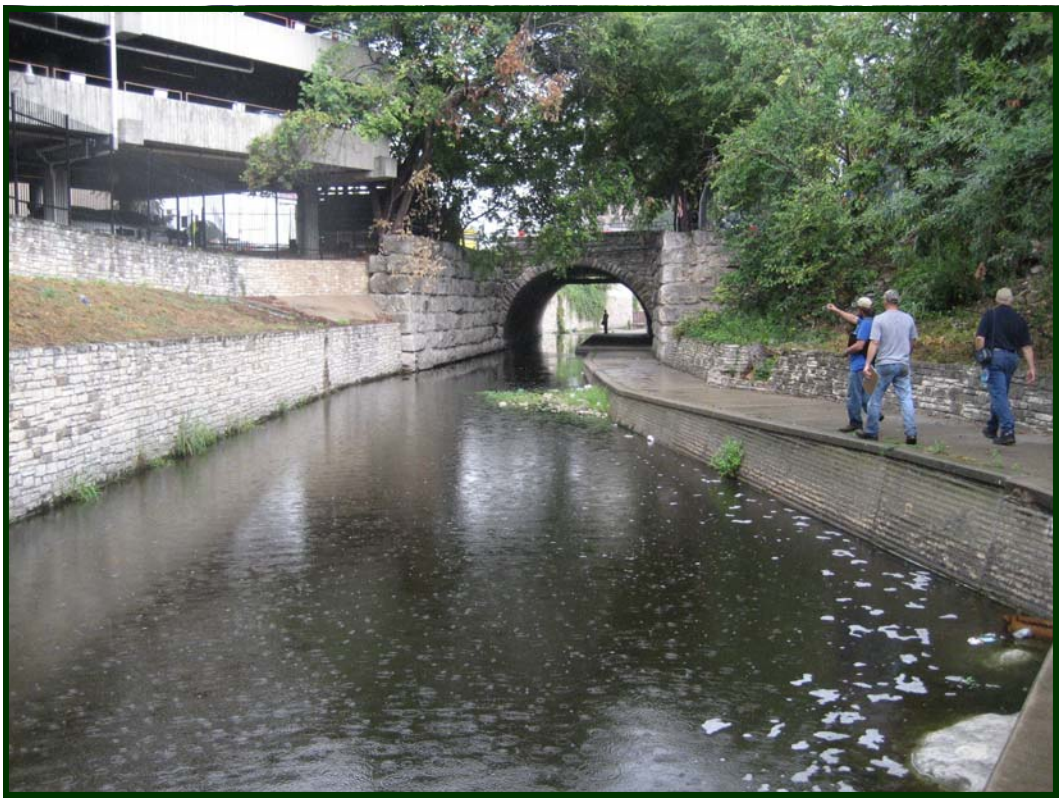

Photo 30 ~ 7th street bridge, looking downstream

Waller Creek ~ 8th to 7th

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Photo 31 ~ 7th street bridge, looking upstream,

Photo 32 ~ looking downstream

Waller Creek ~ 7th to 6th

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Photo 33 ~ looking downstream, low water crossing

Photo 34 ~ 6th street bridge, looking downstream

Waller Creek ~ 7th to 6th

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Photo 35 ~ 6th street bridge, looking upstream

Photo 36 ~ looking downstream

Waller Creek ~ 6th to 5th

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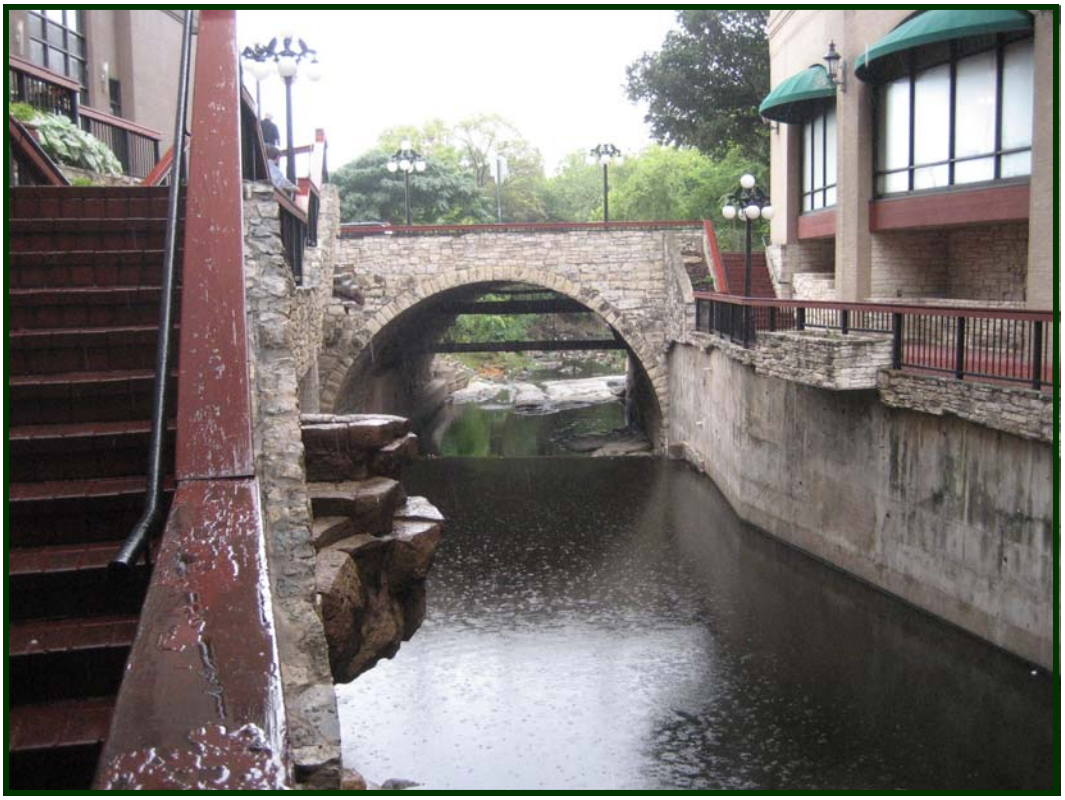

Photo 37 ~ 5th street bridge, looking downstream

Photo 38 ~ dam at the 5th street bridge

Waller Creek ~ 6th to 5th

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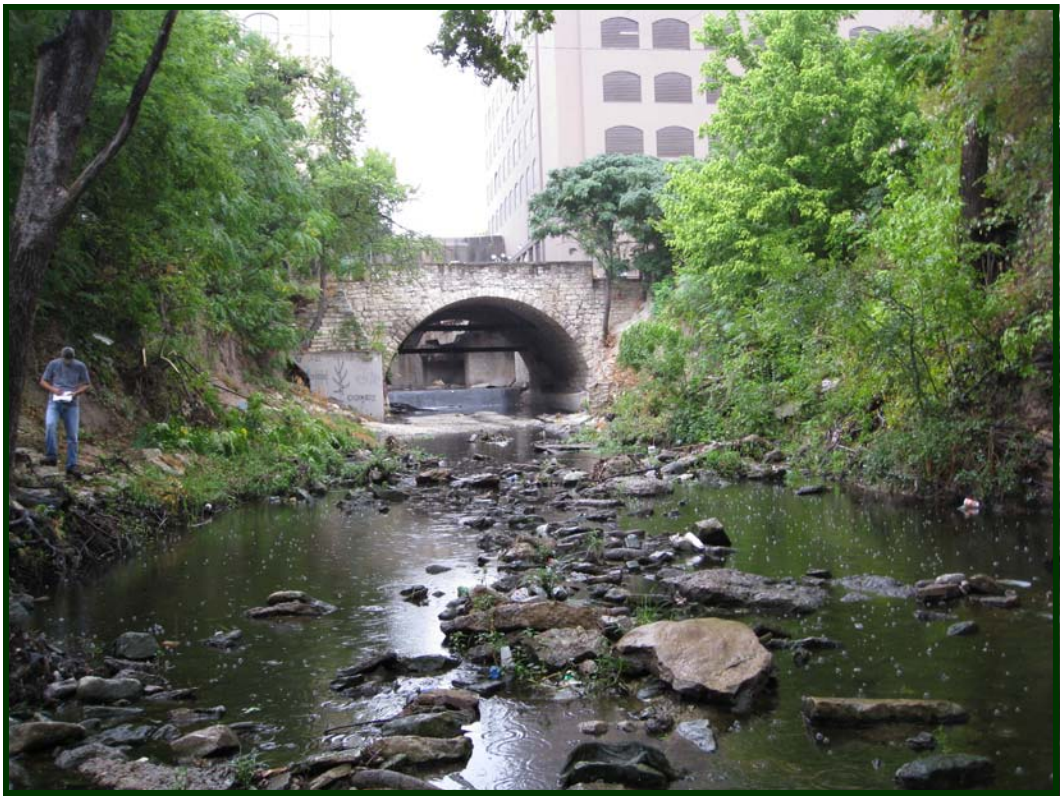

Photo 39 ~ 5th street bridge, looking upstream

Photo 40 ~ east bank erosion at 5th street bridge

Waller Creek ~ 5th to 4th

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Photo 41 ~ east bank erosion and storm drain outfall

Photo 42 ~ east bank erosion, looking downstream

Waller Creek ~ 5th to 4th

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Photo 43 ~ 4th street bridge, east bank erosion,

Photo 44 ~ east bank erosion, exposed pipe

Waller Creek ~ 4th to 3rd

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PHOTO 45 ~ WEST BANK EROSION, UNDERMINED TRAIL

PHOTO 46 ~ 3RD ST. BRIDGE, FAILING CONC, LOOKING DOWNSTRM

WALLER CREEK ~ 4TH TO 3RD

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Photo 47 ~ 3rd street bridge, failing concrete

Photo 48 ~ east bank erosion, undermined trail

Waller Creek ~ 3rd to Red River

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Photo 49 ~ east bank erosion, undermined concrete

Photo 50 ~ Red River bridge, looking downstream

Waller Creek ~ 3rd to Red River

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Photo 51 ~ west bank downstream of Red River bridge

Photo 52 ~ east bank downstream of the Iron Works

Waller Creek ~ Red River to Cesar Chavez

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Photo 53 ~ looking upstream from Cesar Chavez

Photo 54 ~ Cesar Chavez bridge looking downstream

Waller Creek ~ Red River to Cesar Chavez

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Photo 55 ~ Cesar Chavez bridge, east bank erosion

Photo 56 ~ east bank erosion, looking downstream

Waller ~ Cesar Chavez to Lady Bird Lake

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Photo 57 ~ stream riffle, looking upstream

Photo 58 ~ east bank erosion, looking downstream

Waller ~ Cesar Chavez to Lady Bird Lake

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Photo 59 ~ west bank, exposed retaining wall foundation

Photo 60 ~ stream pool, looking downstream

Waller ~ Cesar Chavez to Lady Bird Lake

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PHOTO 61 ~ WEST BANK, FAILING CONCRETE WALL

PHOTO 62 ~ WEST BANK EROSION, UNDERMINED CONCRETE

WALLER ~ CESAR CHAVEZ TO LADY BIRD LAKE

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Photo 63 ~ Waller creek confluence with Lady Bird lake

Photo 64 ~ turtles at confluence

Waller ~ Cesar Chavez to Lady Bird lake

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